

4.1 Statistical Measures
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4 Effective Descriptors of Statistical Data

i) Per Capita

-average per person

$$\frac{\text{Total}}{\text{Total Population}}$$

i.e. GDP/Pop

i) $\frac{5.7 \text{ trillion}}{33 \text{ million}} = 171\,000 \text{ per person}$

ii) Debt Ratio per capita

$$\frac{23 \text{ billion}}{33 \text{ million}} = 692 \text{ per capita}$$

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ii) Percent Change

- measures a change in value over time

$$\frac{(\text{new value} - \text{old value})}{\text{old value}} \times 100$$

i.e. 2 p. 201

i) $\frac{364\,000 - 186\,000}{186\,000} \times 100 = \frac{178\,000}{186\,000} \times 100 = 0.96 \times 100 = 96\% \text{ change}$

ii) $\frac{-22\,000 - 212\,000}{212\,000} \times 100 = \frac{-234\,000}{212\,000} \times 100 = -1.10 \times 100 = -110\%$

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iii) Percentile Rank

Percentile

- indicates the percent of the population with a score less than or equal to a specific value

Percentile Rank

- percent of population with a score less than a specific score

$$P = \frac{(L + 0.5E)}{n} \times 100$$

P = percentile rank
L = # of scores less than the score
E = # of scores equal to the score
n = total # of scores

Reminder Rank Order

i.e. 3 p. 202 & 203

$P = \frac{(7 + 0.5(1))}{12} \times 100 = \frac{7.5}{12} \times 100 = 62.5 \times 100 = 625 \times 100 = 63 \text{ rd percentile}$

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Percentile Rank

The table gives the scores on a high school marketing competition, ranked from lowest to highest.

Score	Rank
5	12
8	11
9	10
11	9
11	8
11	7
13	6
14	5
16	4
17	3
18	2
19	1

a) Determine the percentile rank of each score.

i) 14 ii) 11

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iv) Weighted Mean

Weighted Mean

- a mean in which each component has a different weighting factor

- to calculate a weighted mean, multiply each value by its weighting factor, then divide by the sum of the factors

$$M = \frac{(\% \times \text{weight} + \% \times \text{weight} + \dots)}{100}$$

M = Mark
% = % score on individual task
weight = weight of total grade

i.e. 4 p. 204

$\frac{24}{30} = 80$

$\frac{40}{60} = 66$

$\frac{84}{120} = 74$

$\frac{43}{60} = 72$

$\frac{85}{100} = 85$

$\frac{72}{90} = 80$

Weighted Mark

$$\frac{30(80) + 40(66) + 72(74) + 85(85) + 90(80)}{100} = 76\%$$

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q. 1 a) , c), e), 2 a) , c), e), 3, 4, 6, 8

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